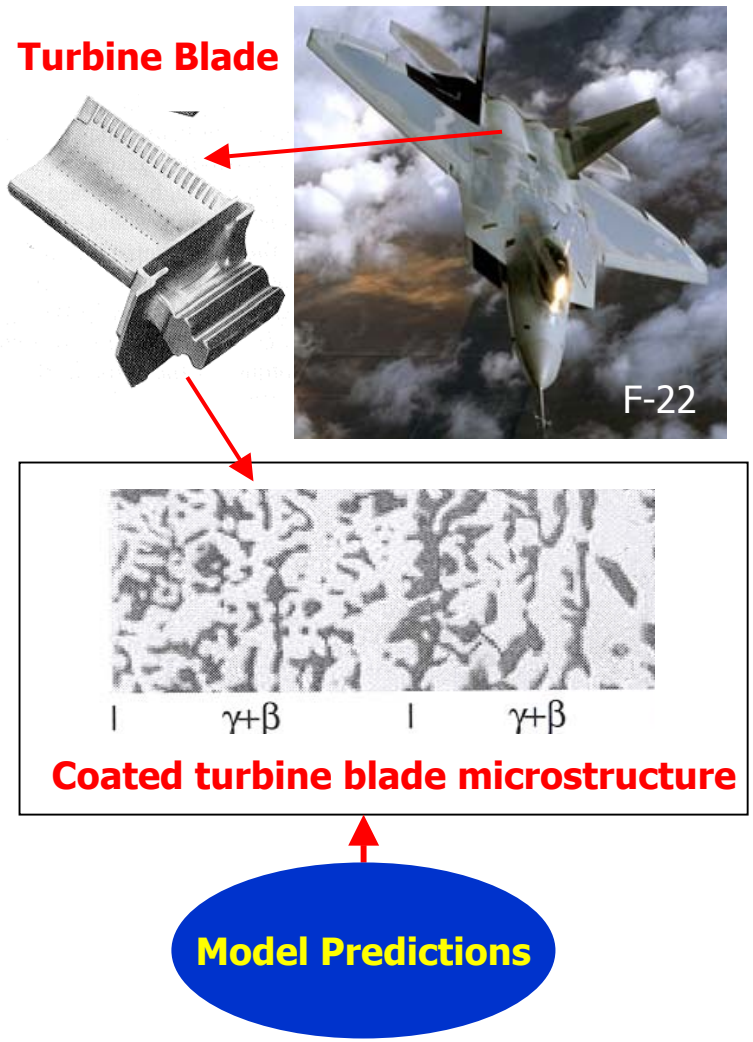
Computational Modeling of Interdiffusion Microstructures

J. E. Morral, University of Connecticut, and Yunzhi Wang, Ohio State University

DMR - 0139705

Interdiffusion Prediction

- Heated alloys react with the environment and surrounding alloys to form interdiffusion zones with reduced properties.
- Interdiffusion zones formed in aerospace alloys will be predicted by advanced methods of mathematical modeling.
- Predictions will be compared with experimental studies using Electron Microprobe and Quantitative Image Analysis.
- The results will enable development of alloy design software that can optimize the processing and service life of aerospace components.



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Outreach

- Presentations will be made at Annual ASM International, TMS and MRS Meetings.
- Anticipated collaboration by YW with engineers at NASA and G.E. as well with engineers at Pratt & Whitney by JEM regarding the modeling of high temperature alloys and coatings.
- Participation on May 20-21, 2002 by JEM in the 17th Biennial Conference on National Materials Policy sponsored by the Federation of Materials Societies on "Materials Education." The objective was explore ways of interesting more primary and secondary students in Materials Science and Engineering.